UCRL-JC-126576 Abs

PS04.17.07 QUANTITATING CHANGES IN THE THREE DIMENSIONAL STRUCTURE OF VARIANT ENZYMES.

Richard Bott and Mark Knapp, Genencor International, 180 Kimball Way, So. San Francisco, CA

Site-specific substitutions made to change performance of an enzyme toward a desired purpose often result in subtle conformational adjustments. Often there is more than one structural consequence associated with any single substitution. In order to associate these structural consequences with altered function, it would be helpful to devise means of quantitating these changes. These changes could then be correlated with altered functionality in a series of variants.

Bacillus lentus subtilisin has been modified for improved proteolytic activity. The three-dimensional structures of several variants have been determined that display increased and decreased performance. It is necessary to obtain the highest resolution data in order to detect and quantitate these subtle changes that contribute to altered performance. Currently the resolution limit of the data can exceed 1.4 Å.

This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.